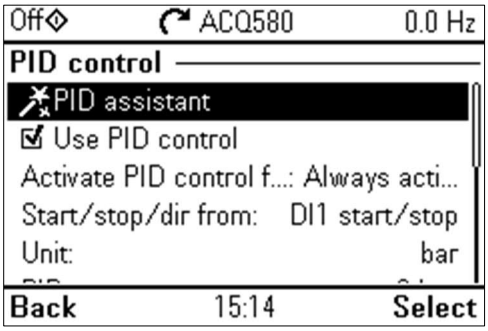
APPLICATION GUIDE

Maintain stable oxygen level with ACQ580 drive's integrated PID controller

This configuration example explains how to program ACQ580 drive's internal PID/Loop controller to maintain stable oxygen level in water.

Oxygen level is constant 2 mgO_2/l and oxygen sensor is connected to AI2. Drive sleep level is 25 Hz. Drive home view will be modified to show the sensor feedback and no external HMI is needed.

Go to Menu – Primary settings – PID control – and start PID assistant



Set AI2 input range to 4...20mA or 0…10 V, depending on the sensor type

Unit: Custom text

Custom text: mg O_2/l

Feedback when AI2 at min: 0.00

Feedback when AI2 at max: 5.00, depending on the sensor type

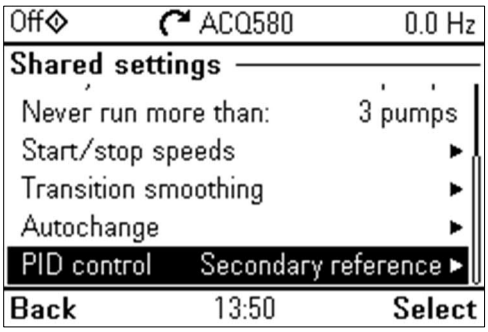
Next

Setpoint source: use a constant value

Setpoint: 2 mg O_2/l

Done

Check from PID control menu that:



Activate PID control from: Always active

Start/stop/direction from: DI1 start/stop

(or reconfigure based on your setup)

scroll further down to Sleep function and activate it.

Activation level: 35 [Hz]

Delay: 30s

Wake-up deviation: 1 mg O_2/l

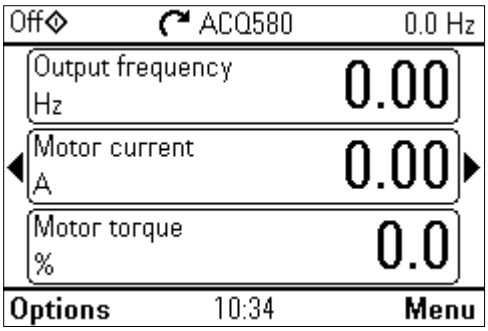
(meaning that the drive wakes up when measured oxygen level differs 1 mg O_2/l from the setpoint.

If the wake-up deviation is set to 0.5 mg O_2/l, the drive wakes up when the oxygen level is 1.5 mg O_2/l)

Wake-up delay: 1.0s

Then modify the home view to display the sensor feedback:

Return to homescreen – press Options – Edit Home view

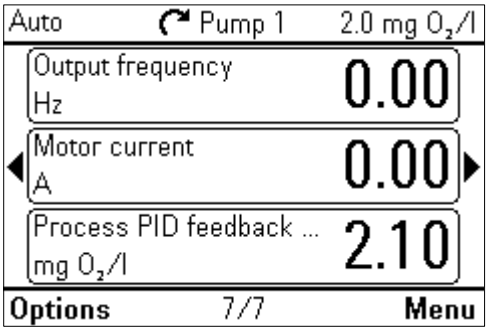


Select signal you want to replace e.g. Motor torque – press edit or scroll to the right to add a new screen – press Add

Parameter: 40.02 Process feedback actual

You don't need to touch the min, max or scaling parameters

Done



This guide is designed to help assist with programming the PID/Loop controller to maintain stable oxygen level in aeration application. Please consult your local ABB for additional assistance.